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German Late War Radar Development (1 Viewer)

 **Jemiba** ·  Oct 4, 2015

Watch



Jemiba

ACCESS: Above Top Secret

Staff member

Top Contributor

Senior Member

Oct 4, 2015

  #1

Tests for Radar absorbing materials were actually done in Germany around 1944, but not for aircraft, but for the snorkels of the Uboats (<http://www.uboataces.com/snorkel.shtml> , https://de.wikipedia.org/wiki/Schnorchel_%28Schiffsteil%29). Those wrappings and coatings were partially succesful, but the used materials to my opinion weren't very useful for aircraft.

It takes a long time, before all mistakes are made ...

 Report

 Like

 Reply



newsdeskdan

ACCESS: Top Secret

Top Contributor

Senior Member

Oct 4, 2015

  #2

Jemiba said:

Tests for Radar absorbing materials were actually done in Germany around 1944, but not for aircraft, but for the snorkels of the Uboats (<http://www.uboataces.com/snorkel.shtml> , https://de.wikipedia.org/wiki/Schnorchel_%28Schiffsteil%29). Those wrappings and coatings were partially succesful, but the used materials to my opinion weren't very useful for aircraft.

This is correct. The files are there at TNA on radar absorbing materials for U-boat snorkels.

 Report

 Like

 Reply



newsdeskdan

ACCESS: Top Secret

Top Contributor

Senior Member

Oct 4, 2015

  #3

red admiral said:

newsdeskdan said:

They were not working on materials that had anything to do with radar either. I would ask you to show me a single WW2 document that mentions the effect of aircraft shapes or materials with regard to radar but I know that such a thing does not exist.

I did see a UK technical report from 1941 or 42 that outlined this in theory, how a RAM would work, what materials might be suitable etc. It was in the back of an old textbook but could probably be found in TNA.

Report I haven't seen anything on this but I can well believe it. The British were way ahead on all aspects of radar.

W

Wurger

ACCESS: Top Secret

Senior Member

Oct 5, 2015

#4

newsdeskdan said: "The british were well ahead on all aspects of radar". Actually it's not true, the germans were catching up very fast, as the north-americans acknowledged after the war. Much has been said (by the brits) on british superiority on radar, but it is now very debatable and this is being deflated, especially in America. The AI Mk IX radar was a total flunk on the british side, to take an example. If you stick to Alfred Price`s works on Luftwaffe radars and Norman Friedman on german naval radar you just get biased and extremelly sketchy information in german electronics. I suggest this unsuspected site, made by dutchmen and free from british selfcentered radar propaganda:

<http://www.cdvandt.org/index.htm>

Report

Like

Reply

**newsdeskdan**

ACCESS: Top Secret

Top Contributor

Senior Member

Oct 5, 2015

#5

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<http://www.cdvandt.org/index.htm>

I wouldn't call it an unsuspected site! It's a fantastic site full of useful primary source material - the CIOS, BIOS and FIAT reports in particular have been very useful. I'd hate to think that I was responsible for spouting self-centred British radar propaganda. Which particular aspects of radar were the Germans

catching up fast on? I'm fully prepared to be proven wrong.

 Report

 Like

 Reply

J

Justo Miranda

ACCESS: Top Secret

Senior Member

Oct 5, 2015





#6

"The british were well ahead on all aspects of radar"

I agree

 Report

 Like

 Reply

W

Wurger

ACCESS: Top Secret

Senior Member

Oct 6, 2015





#7

German decimetric radar was well ahead of British radar, and they were quickly catching up on centimetric, emulating american magnetrons (from the 3cm h2x), but pursuing their own line of investigation. German engineering was recognized by the British to be excellent (they had this transpired after the bruneval raid) as compared to theirs, And the Germans reckoned the British sets to be clumsy And bulky (in their wording, "too much air in the box").

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Also, as often unrecognized by anglo-saxon sources, the resonant magnetron was not invented in the UK, it was in germany by hollman.

Much of my amateurish arguments can be well researched in that website, as well as in the excellent fritz trenkle's books (both published and unpublished).

Although many cios/bios/fiat reports are interesting, those made by British officials differ from those made by us personnel, more willing to acknowledge the german achievements. From memory I recall one on German aircraft fire control, in whih they were extremely advanced, where, despite the many types refered and the interesting techniques described, the authors concluded that German technology was behind the British accomplishments, whatever they were.

Many articles in that website cite the British proclivity to underestimate foreign technology, even in the many conferences Mr. Bauer attended and participated with his own research.

 Report

 Like

 Reply



newsdeskdan

ACCESS: Top Secret

Top Contributor

Senior Member

Oct 6, 2015





#8

Wurger said:

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There certainly appears to be a case there for a dispassionate study. As much as I'm interested in your revisionist attitude, I can't help but be a little put off by your rather general claims about British, German and American technology. The Americans have good production engineers, "the Brits don't". Really? The British sets are clumsy and bulky with too much air in the box. Really?

The British seem to acknowledge the excellence of German engineering achievements in numerous instances. Read the Farren report on the work that went into the He 162. The same is evidently not true the other way around.

Regarding fire control, it's a shame you haven't read about any of the British technology you're so certain wasn't up to the job. Ever heard of Predictor No. 11 developed by the Telecommunication Research Establishment?

I would be quite prepared to concede the superiority of German radar technology, or American, if you could provide some real evidence that what you are saying is correct. As it stands, you have convinced me that you have a strong dislike of British WW2 technology but beyond that I am unpersuaded.

Report

Like

Reply

W

Wurger

ACCESS: Top Secret

Senior Member

Oct 6, 2015

#9

Yes, I've heard about the Predictor No. 11 developed by the Telecommunication Research Establishment, Ian Hogg happened to mention it, but it was an AA director. Have you heard about the electronic experimental AA directors (3 successive versions) developed by Askania? Or the ones on development by AEG?

Brits brag about of the development of Huff/Duff. Do you know about the german extraordinary developments on this? Please consult the refered webpage.

German aircraft radar fire control is most interesting. I suggest, apart form CIOS/BIOS7FIAT, the excellent US Naval Technical Mission in Europe reports. Fritz Trenkle's also provided on this subject. FFO was working on AGLT probably (they were working on it in late 1944, as reported) at the same time TRE was

doing the same. The 1,5 cm FuG248 Eule was ahead anything the western allies had on short range fire control radar. And so on...

Reading and researching off the anglo-saxon range will make it more horizont-broadening. Unfortunately no widescope radar literature or research appeared on Germany since Fritz Trenkle, but even his work is now not up to date. There enters Arthur Bauer's work which will fulfill some of the gaps. On those allied reports, I much prefer those made by the americans. They had this flair for gadgets much like the germans, with their plethora of sets which ultimately contributed to their demise but are, at least to me, technologically fascinating.

[Report](#)[Like](#)[Reply](#)**CJGibson**

ACCESS: Top Secret

Senior Member

Oct 7, 2015



#10

"Write me a book on German radar achievements"

Aye, write one, but try getting it published. That's the reason it hasn't been covered - no mass market. Chances are that if you're into radar, anything in a book about radar will be old hat to you.

to widen the debate, there is plenty on the *Wunderwaffen*, but nowt on the radar, radio, chemistry etc. For example, there's a few academic works on the German war economy esp. synthetic fuels, but nothing in the mainstream press (that I have seen) that is in the style of David Edgerton's *Britain's War Machine*, which looked at fuel, energy and food supplies in wartime Britain.

Chris

[Report](#)[Like](#)[Reply](#)**newsdeskdan**

ACCESS: Top Secret

Top Contributor

Senior Member

Oct 7, 2015



#11

CJGibson said:

but try getting it published.

Kindle Direct Publishing (and similar) - it's the way forward for niche publications. You get a worldwide market and it never goes out of print. Not great for clear reproduction of images but that wouldn't be essential for a book on radar anyway.

It's not going to make you rich either but you can put your ideas and analysis out there for others to read the way you'd like them to be read, no matter how niche.

EDIT: I'm also not convinced that there is no market for a book that's written the right way. There's no market for a boring book, that's true, but if you write it in the context of the big battles, the desperate struggle, the hair-raising consequences of failure etc., sitting the tech alongside the practical realities of how it was used, you get something appealing (in my view). Also, radar feeds into stealth, for which there seems to be an unending appetite. Perhaps the real problem we have here is a lack of authors who possess both a technical understanding of radar and the ability to present it in a clearly understandable, accessible and relevant format. The closest I think I've seen anyone come to that is the D-Day Operations

Manual from Haynes.

Report

Like

Reply

J

Justo Miranda

ACCESS: Top Secret

Senior Member

Oct 7, 2015

#12

"Write me a book on German radar achievements"

Motorbuch Verlag Stuttgart ISBN 3-87943-668-1

Attachments



USN059.jpg

Inhalt

Einleitung	7
1. GRUNDGRIFFE DER FUNKMESSTECHNIK	10
2. DIE ERSTEN FUNKMESSGERÄTE-ENTWICKLUNGEN IN DEUTSCHLAND	14
3. DIE BODENGERÄTE DER LUFTWAFFE	24
3.1 Die Geräte der Flak-Artillerie	24
3.2 Funkmeßgeräte für Flugmeß- (Flum) Zwecke	40
• Freya-Geräte / Fernsuchgeräte / Rundsuchanlagen	
4. DIE BODENFUNKMESSGERÄTE DER LUFTWAFFE	81
4.1 Übersicht	81
4.2 Aktive Zieluchgeräte	84
4.3 Passive Warn- und Zieluchgeräte	128
4.4 Halbaktive Zieluchgeräte	141
4.5 Kern- und Abhörgeräte	142
5. FUNKMESSORTUNGSGERÄTE DER KRIEGSMARINE	159
5.1 Seesichtische Geräte = FuMO (Seesicht)	159
5.2 Funkmeßgeräte für die Spezial-Artillerie = FuMO (Spezial)	162
5.3 Funkmeßgeräte für die Marine-Flak = FuMO (Flak)	166
5.4 Funkmeßgeräte für Marine-Flugmeßzwecke = FuMO (Flum)	168
5.5 Funkmeß-Erkennungsgeräte für die Kriegsmarine = FuME	169

USN060.jpg

Stichwortverzeichnis

Aktive Zieluchgeräte	84
Halbaktive Zieluchgeräte	141
Kern- und Abhörgeräte	142
Passive Warn- und Zieluchgeräte	128
Seesichtische Geräte = FuMO (Seesicht)	159
Funkmeßgeräte für die Spezial-Artillerie = FuMO (Spezial)	162
Funkmeßgeräte für die Marine-Flak = FuMO (Flak)	166
Funkmeßgeräte für Marine-Flugmeßzwecke = FuMO (Flum)	168
Funkmeß-Erkennungsgeräte für die Kriegsmarine = FuME	169

USN061.jpg

Freya-Geräte	40
Funkmeßgeräte für Flugmeß- (Flum) Zwecke	40
Funkmeßgeräte für die Spezial-Artillerie = FuMO (Spezial)	162
Funkmeßgeräte für die Marine-Flak = FuMO (Flak)	166
Funkmeßgeräte für Marine-Flugmeßzwecke = FuMO (Flum)	168
Funkmeß-Erkennungsgeräte für die Kriegsmarine = FuME	169

USN063.jpg

Freya-Geräte	40
Funkmeßgeräte für Flugmeß- (Flum) Zwecke	40
Funkmeßgeräte für die Spezial-Artillerie = FuMO (Spezial)	162
Funkmeßgeräte für die Marine-Flak = FuMO (Flak)	166
Funkmeßgeräte für Marine-Flugmeßzwecke = FuMO (Flum)	168
Funkmeß-Erkennungsgeräte für die Kriegsmarine = FuME	169

USN064.jpg

Report

Like

Reply

W

Wurger

ACCESS: Top Secret

Senior Member

Oct 8, 2015

#13

I hope to present here soon a book on german (naval) radar, with a tiny contribution from me. Unfortunately, on german airborne radar, the old Fritz Trenkle books (commercially edited by Motorbuch and Bernard&Graefe and the manuscripts from DGON) are still unknown in english language, and needing an update. Modern research in Germany is, to my knowledge, nonexistent, or close to it. Trenkle failed to mention, though, the german army (Heer) efforts on radar (artillery and mortar location, field surveillance or AA defence), but all I got `til now is a quite blurred image on this subject. But they had them in consideration, and up to testing experiments!

Report

Like

Reply

L

lastdingo

Blogger <http://defense-and-freedom.blogspot.de/>

Oct 8, 2015

🔗 📌 #14

There was also a Waffen Arsenal booklet issue about German FuMG, in its usual style; many monochrome photos, some line drawings IIRC, not terribly much text, divided by types.

<http://defense-and-freedom.blogspot.de/>

🚩 Report

👍 Like

↩ Reply

J

Justo Miranda

ACCESS: Top Secret

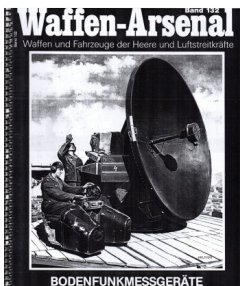
Senior Member

Oct 9, 2015

🔗 📌 #15

Here

Attachments



USN075.jpg

🚩 Report

👍 Like

↩ Reply

W

Wurger

ACCESS: Top Secret

Senior Member

Oct 9, 2015

🔗 📌 #16

Much better is this one, in german language, although far from complete:

<http://www.amazon.de/Radarkrieg-Nachtluftverteidigung-Verfahren-n%C3%A4chtlichen-Luftangriffe/dp/3866190123>

Some time ago I stumbled on soviet 1946 reports on german electronics. A lot of the sets referred to I couldn't find in Trenkle, and this author is the most comprehensive. There's a lot to be done researching for this subject.

🚩 Report

👍 Like

↩ Reply

B

Basil

ACCESS: Secret

Jan 26, 2016

🔗 📌 #17

Wurger,

thx for the link to this book: I didn't know this one. It's a very well made research concerning German

<https://www.secretprojects.co.uk/threads/german-late-war-radar-development.25713/#post-261274>

...and the main to the body, I don't know the exact date, but I have read research concerning German radar during WW 2. You refer to soviet 1946 reports containing descriptions of innovative German electronic sets. Which source is that? Any chance to have an insight?

After having read several books (nearly all of Trenkle, R. V. Jones, etc.) regarding the race in radar development between Germany and the allies I think it is safe to say that Germany had a lead in „the war of beams“ during the first period of war (especially in long range bomber guidance over England, but also with the introduction of the Wuerzburg air defence radar).

However, Germany missed the jump to centimeter waves in time due to several reasons although the technology was there in laboratory research scale (magnetrons, klystrons, metal-ceramic coaxial tubes). Among the reasons for not having adopted the centimeter waves until later in the war was the fact that at this time the regime forbid any research on electronics which would not be ready in the next six months (awaiting final victory) and a not very well focused strategy of common research of the major electronic manufacturers (AEG-Telefunken, Siemens; Lorenz, Blaupunkt, etc.) compared to the US. It also did not help that some scientists had for some time general reservations to the suitability of centimeter waves for radar.

During the last year of the war Germany was constantly reducing the gap in the centimeter wave field but did not quite catch up to the US and UK lead (referring to charts of Trenkle and Jones). Of course at this time the bomb raids showed its effects and slowed down all activities of research and manufacturing. Besides human resources in R&D was less than 10 % compared to the US and UK in numbers.

 Report

 Like

 Reply



skylon

I really should change my personal text

Apr 5, 2016

  #18

Justo Miranda said:

"The british were well ahead on all aspects of radar"

I agree

No, Germans were ahead on all aspects of radar by miles.. Robert Watson-Watt was not the inventor of radar, as is commonly believed..Also the Cavity magnetron was invented by Germans Hans Erich (Eric) Hollmann in 1935 ,filed a patent in 1936 long before the Brits and granted a patent in 1938 ..Birmingham university scientists Randall and Boot simply worked on this.. Hitler didn't support the Project because German military considered the frequency drift of Hollman's device to be undesirable, and based their radar systems on the klystron instead but klystrons could not at that time achieve the high power output that magnetrons eventually reached..

Even after Battle of Britain Churchill firmly believed German radar technology was ahead ...The only advantage of the British was that Germans failed to recognise the significance of the Chain Home system...

 Report

 Like

 Reply



skylon

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Apr 5, 2016

  #19

Wurger said:

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Much of my amateurish arguments can be well researched in that website, as well as in the excellent fritz trenkle's books (both published and unpublished).

Although many cios/bios/fiat reports are interesting, those made by British officials differ from those made by us personnel, more willing to acknowledge the german achievements. From memory I recall one on German aircraft fire control, in whih they were extremely advanced, where, despite the many types refered and the interesting techniques described, the authors concluded that German technology was behind the British accomplishments, whatever they were.

Many articles in that website cite the British proclivity to underestimate foreign technology, even in the many conferences Mr. Bauer attended and participated with his own research.

AbsolutelyMy own conclusion is that British sources are and always have been extremely biased when it comes to technological achievements of ww2.

Battle of Britain and the Spitfire myth tells the whole story .

Report

Like

Reply



overscan (PaulMM)

Administrator Staff member

Apr 6, 2016

#20

<http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=6735528> is a good account of the development of the cavity magnetron.

The winners generally write history but this seems a pretty unbiased account by three authors from Italy, France and the Netherlands.

Like many other disruptive breakthroughs, the cavity magnetron was the result of a number of related explorations, in technology, in experiment, and in theory. Many other scientists, scattered over quite a few countries, made significant advances. However, exchange of ideas and opinions in scientific forums was getting more and more difficult in the build-up for WW II, as well as between Eastern and Western scientists in the ensuing "Cold War" period. The actual global status of science and technology was known in a rather fragmented way to many engineers and scientists. The military relevance at the time led to teams working on the same type of problem, but in imposed isolation. Although the Birmingham team had brilliant ideas and their share in the development proved decisive, it is fair to say that without the contributions from others, their degree of success and the pace of the progress would not have been so great, or maybe it would have been too late for a timely development of microwave high-power radar in World War II.

British engineers and scientists combined a number of important breakthroughs in making their magnetron which gave the Allies a 2-3 year head start in microwave radar technology. The Tizard mission showed that the Brits were ahead of the US in most areas of radar technology, and the needed Allied

snowed that the Brits were ahead of the US in most areas of radar technology, and the pooled Allied radar work leveraged American expertise in mass production combining the British and American

strengths.

The magnetron was invented by an American, improved by a Japanese researcher, and the oxide coatings which GEC added to Randall and Boot's design to improve it came from a French scientist. The Americans commercialised production: 150 different radars derived from it by the end of the war. The MIT Radiation Laboratory textbooks which came from this Allied effort formed the basis of postwar radar and electronics industries all around the world.

The German patent mentioned is a 4 cavity design; we don't know if Randall and Boot knew of it, but even if they did their design used more cavities. Patenting a 4 cavity magnetron design is not the same as coming up with a finished, reproducible industrial product. German scientists and engineers were obviously aware of the magnetron, but mostly preferred the klystron because it gave stable frequencies and was therefore technically 'superior' for many applications - but it couldn't match the power generation capability of the magnetron. Eventually, with pulse-doppler radars needing predictable frequencies, the magnetron was largely supplanted by klystrons and Travelling-Wave Tubes (TWT).

Britain mostly surrendered their technical lead after WW2, though they remained on the cutting edge in anti-ECCM work, and Ferranti (even Marconi, occasionally) consistently delivered good products up to and including the Typhoon's Captor radar, which won against a US/German radar design.

 Report

 Like

 Reply



newsdeskdan

ACCESS: Top Secret

Top Contributor

Senior Member

May 20, 2016

  #21

skylon said:

Wurger said:

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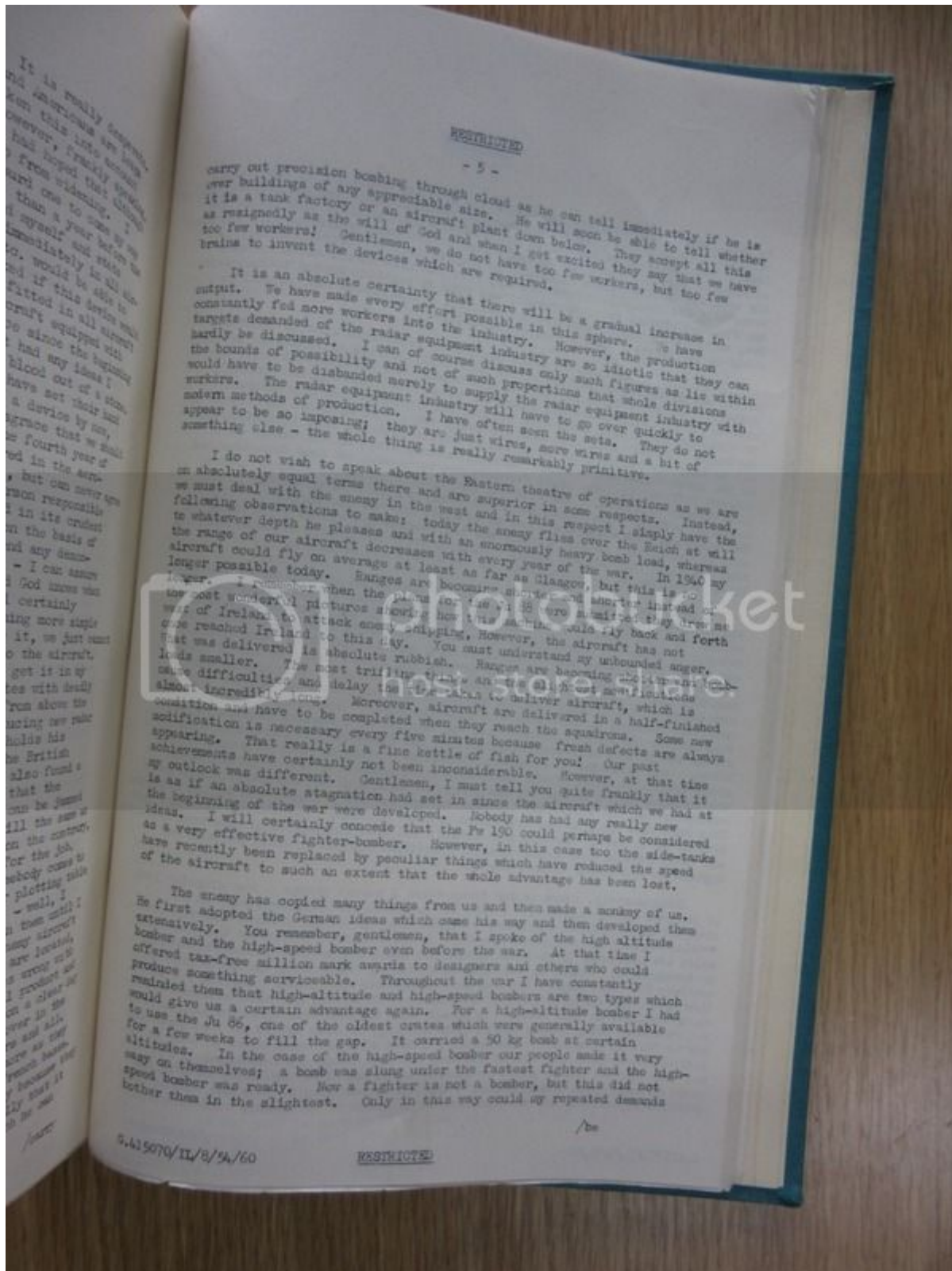
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Battle of Britain and the Spitfire myth tells the whole story .

On the topic of German WW2 radar achievements, historical revisionism appears to have resulted in a degree of myth-making at the expense of the British. Here is the translated transcript of a speech given by Hermann Göring at Carinhall to the chief executives of Germany's top aircraft manufacturers on March 18, 1943. Would you regard the Reichsmarschall speaking candidly, in private, to some of the country's most important men - all of them intimately familiar with the state of radar technology in Germany at that time - as a 'British source'?





① Report

Like

Reply

Basil
 ACCESS: Secret

Feb 10, 2017

  #22

Wurger,

in your post from October 8, 2015, you refer to a soviet 1946 report on German electronics. Is this source accessible? It seems German electronic experts had a great value for the soviets. Btw they were the last German technicians and scientists released from soviet union as late as 1956.

 Report Like Reply

W

Wurger

ACCESS: Top Secret

Senior Member

Feb 11, 2017

  #23

Hi Basil,

sure, I will direct you (and others) to this website. There you can download a lot of interesting documents, mostly german and russian, but also from the US. Glad to help those who share an interest on german electronics.

<http://www.rkk-museum.ru/documents/archives/archives3.shtml#books>

Search for:

Совет по радиолокации при Совете Министров СССР

Обзор трофейной техники. Выпуск 1. 9. 11. 12. / М. 1946. р.



Secret Projects Forum

A



German scientists were instrumental in the soviet electronics industry, as well as whole factories were transfered, along with their technicians. Bogdan Musial's "Stalins Beutezug" gives an historic approach to the industrial looting of eastern Germany, much like the western allies did but at a smaller scale, although not scientific, I'm afraid.

Those reports (for which one is lacking, n°12, I believe) were just summaries. I am long after the specific, targeted subject reports, although you can read there references to otherwise unknown radars like "Kulmbach P" or "Berlin-Lampe". Work on millimeter waves are present (e.g. 0,7cm). Even Trenkle doesn't mention them...

 Report Like Reply

B

Basil

ACCESS: Secret

Feb 12, 2017

  #24

Hi Wurger,

thanks for your reply and the link.

Yes, a very interesting topic and not very well documented compared to English and American developments, especially concerning airborne radar and missile guidance systems from the last months of the war. Besides Trenkle there is very little detailed information available from first hand.

However I could only find German or English documents in this link:

http://www.rkk-museum.ru/documents/archives/archives_e.shtml

Unfortunately I am not able to read Russian documents. I would be very interested in developments you mentioned in your post (millimeter waves etc.).

Report

Like

Reply

W

Wurger

ACCESS: Top Secret Senior Member

Feb 12, 2017

#25

I'm still waiting for an authorised translation. Meanwhile I use the cyrillic keyboard to translate some of the more catching phrases. Time consuming, yes, but when you are motivated...

Report

Like

Reply



newsdeskdan

ACCESS: Top Secret Top Contributor Senior Member

Dec 17, 2018

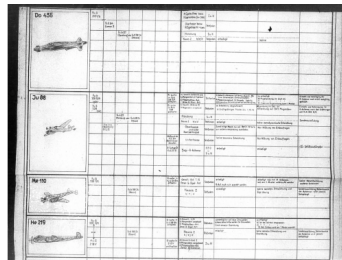
#26

Might be of interest.

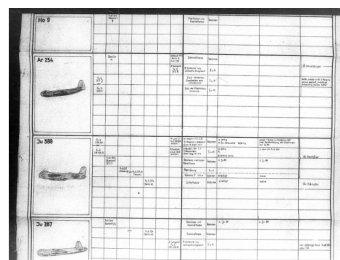
Attachments



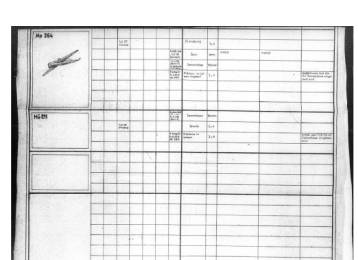
Funkmess-Antennen 1.png



Funkmess-Antennen 2.png



Funkmess-Antennen 3.png



Funkmess-Antennen 4.png

Report

Like

Reply

W

Wurger

ACCESS: Top Secret Senior Member

Dec 18, 2018

#27

Might be of interest

It is !!

Thanks for sharing, Dan.

Report

Like

Reply

M

major-1

2 Form

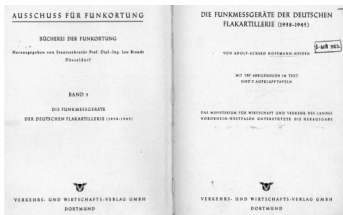
Dec 20, 2018

#28

It may be interesting to the Germans. I don't know if they know this book.

<http://mega.dp.ua/file?source=18122014190355559333>

Attachments



1.png

ⓘ Report

 Like

↩ Reply

W

Wurger

ACCESS: Top Secret Senior Member

Dec 20, 2018

#29

It's a very good source. I have it for many years and is still a major reference.

ⓘ Report

 Like

↩ Reply

M

Maury Markowitz

From the Great White North!

Dec 28, 2018

#30

I realize I'm wading into a necrothread here, but I'll pitch in as well.

Having read practically everything I can find on the radar systems of the various combatants of WWII, there is absolutely no doubt whatsoever that Allied systems were far in advance of their German counterparts, and even more so over the Japanese.

While it is true that Hans Hollmann did indeed intent **a** magnetron, he didn't invent **the** magnetron. The difference is one of degree, but in this case, the degree is about two orders of magnitude. Hollmann's magnetrons generated on the order of tens to hundreds of watts, had significant problems with frequency drift, and did not use a seed signal that could be used on the receiver. As a result, the German authorities rejected them in favour of klystrons, which also generated tens to hundreds of watts, but were more robust, had no problems with drift, and used a separate seed signal which could also be fed into the receiver's superheterodyne tank.

In contrast, Randal and Boot's first magnetron was bored from a solid block of copper, and was capable of

generating 1000 W. Within weeks it was up to 5 kW, and after GEC had a look, 25 kW. As a result, the UK had a practical microwave radar source in 1940, whereas no one else in the world did. The US, for instance, had followed the same train of logic as the Germans and had klystrons of a few tens of watts, and were simply blown away by the magnetron when they saw it in September. They were so taken by its promise that they had a production line set up before the British team had even managed to return home. We were even building them in Canada by the end of the year and had a (semi-)operational microwave GL radar by 1943.

Using the magnetron had the other disadvantages noted above, that is, frequency drift and the lack of a seed signal that could be sent into the LC tank of the heterodyne. Moreover, existing tube-based rectifiers used in the detector stage simply didn't work at those frequencies. Less important but still annoying was there was no RF switch that operated at those frequencies so you had to use separate antennas for transmit and receive. These are serious problems, but the UK attacked them one by one until they had them all. Frequency drift was an issue in the UK magnetrons as well, but much less of one because it was built out of a single block of metal that was then water or air cooled so the expansion and warping wasn't as much of a problem. The second was addressed by the introduction of the reflex klystron, which tapped off the output of the magnetron, modified it by a fixed amount, and fed that into the heterodyne. A modification of this same system solved the problem of a suitable RF switch. A tube-based detector never emerged, but in its place, the UK developed semiconductor diodes that solved this problem.

By 1941 the UK had complete working microwave radar systems. This led to the introduction of the H2S, and the great debates over its use. It was captured almost immediately, on 3 February 1943, but the Germans were unable to get a similar set into action. The only one that got remotely close was the Berlin units, and they wouldn't have been available in any reasonable form until 1946. The magnetron itself was easy enough to build, Randal and Boot did it in a disused lab after all, but other parts remained huge problems. They had no semiconductor industry and two years later their crystals still didn't work for more than minutes on average, they never managed to get a working reflex klystron, and it took a full year before they even figured out how the reflex klystron switch even worked.

By that time the UK was already moving to 1.25 cm wavelengths, had deployed ASV, H2S, AI, GCI and EW microwave radars, were experimenting with Doppler radars (H2D), COHO MTI and many other technologies like microwave-relay communications systems. The US had introduced grown crystals which would lead to the transistor, highly advanced conical scanning units like the SCR-584 that could track individual artillery shells, let alone aircraft, and were well on their way to second-generation systems that were so improved no one ever caught up.

The only true success the Germans had in the microwave field was the Naxos detectors, and even they were limited in capability. Their radars never worked, and their H2S jammers were abandoned because they were useless. The UK also beat them in the introduction of IFF, beacon guidance like Rebecca, hyperbolic navigation, transponder-based landing aids, chaffe, inverse con-scan jamming (which drove the Würzburg operators absolutely batty), comm jammers like ABC and Jostle, and any number of other technologies.

The situation was so bad for the Germans that there were numerous instances where they would see targets on the radars and simply not believe they were real, to cases where they could hear aircraft flying above them which were invisible because they completely jammed, to cases where they shot down their own aircraft because they were so afraid of the British tracking their signals that they told pilots to turn off their IFFs and thus appeared to be enemy aircraft to the AA gunners. The entire radio battle was completely out of control, and the Germans were the first to admit it. They had their share of successes, like Klein Heidelberg and Cerberus jamming, but these were the exception to the rule. I mean, the situation at Malta where they simply gave up even attempting to jam UK VHR radars says it all - they had the radars jammed but the RAF operators managed to convince them it wasn't working so they went home!

Sorry, but if you're reading this and you actually believe the Germans were even close then you simply haven't read nearly enough about the topic.

[Report](#)[Like](#)[Reply](#)

zen

B**Basil**

ACCESS: Secret

Jan 1, 2019

[Share](#) [Bookmark](#) #31

Thank you for this summary, Maury.

While at the beginning of the war Germany had a lead in this field of technology (stated by R. V. Jones and others and manifested e.g. by the Wuerzburg radar and its long range pendants, the development of proximity fuzes - see the „Oslo Report“, etc.), they at the latest lost the lead with the introduction of the centimeter wave and the use of the magnetron by the allies.

As mentioned above there were several factors responsible for this trend; the main reason was the shortsightedness of the german leadership (stopping work on advanced electronic projects, drafting a huge amount of technical staff into frontline war service and the resulting thinning of the human technical resources - at the end of the war the allies had the tenfold number of research personnel in electronics). From the point when the „Rotterdam Geraet“ was found a newly found working group „Arbeitsgemeinschaft Rotterdam“ was created and focus was laid on the centimeter wavelength – although surprisingly at the beginning not with the necessary effort in regards for its use in the air defense role. One reason might be that the german leadership still emphasised offensive (bomber) capabilities instead concentrating solely on air defense until sometimes in 1944.

However also in the UK progress in radar was tied to a small number of researchers. An example is the abandoning of the AI MK IX radar after losing Downing as the lead technician for this work via friendly fire and instead adopting the american SCR-720 and relying on the vast american production resources.

The allied lead in microwave technology could not be caught up by the Germans and because of the deteriorating war situation it was an unrealistic aim to get any significant number of microwave sets into frontline service during the last 10-12 months of the war. Instead great effort was laid on introducing anti jamming circuits for the available decimeter wave radars because this was needed most immediately.

If one states that centimeter radar would not have been in widespread use by Germany until the later second half of 1945 this may be true in regards to the destruction of production facilities and infrastructure by the massive day and night bombing raids but it cannot be said about the general research status. In the laboratory environment Germany was closing the gap in the race for smaller wavelengths and high microwave power outputs (charts by F. Trenkle and also mentioned by R. V. Jones). Additionally there was a surprisingly number of innovative concepts for microwave radar and radar based fire control systems on drawing boards down to millimeter waves.

In contrast to german aircraft and propulsion projects which are more or less well documented (although Newsdeskdan still manages to surprise) the german microwave field seems yet to be an area for further historical analysis (besides Trenkle). Much of the electronic research was focused in the region around Berlin which was overrun by the Soviets who captured both the documents and the research personnel and many details may have been lost in this process.

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zen

yellowaster

Y

ACCESS: Confidential

Jan 2, 2019

  #32

just a nitpick, but the UK did not abandon AI Mk IX following the introduction of AI Mk X - rather, development was continued but at a reduced priority.

 Report Like Reply

B

Basil

ACCESS: Secret

Jan 2, 2019

  #33

Thx, Yellowaster, correct. Afaik, the research model mk IX c was the most advanced with lock-on etc. However, even postwar it was not adopted by the RAF because of a weak low-level performance. Ian White's book "The History of Air Intercept Radar" is a good read for this topic.

 Report Like Reply

Y

yellowaster

ACCESS: Confidential

Jan 2, 2019

  #34

Ian White's book is not completely accurate when discussing some bits of the post-war AI story. To cut a long story short, AI Mk 9B had many deficiencies and was rejected. It's successor was AI Mk 9C, which originally was just AI Mk 9B with an add-on predicted aiming facility using GGS. (AI Mk 9D, which provided predicted aiming via a gyro prediction unit, was a failure). The rejection of AI Mk 9B, and the requirement for high altitude operation, led to a redesign of AI Mk 9C to fix (some of) the failings of 9B. The resulting radar (essentially an improved, high-altitude version of AI Mk 9) was redesignated AI Mk 17.

 Report Like Reply

B

Basil

ACCESS: Secret

Jan 3, 2019

  #35

Thank you for clarification. Are there weblinks or books which describe the AI mk 9 development in detail?

 Report Like Reply

Y

yellowaster

ACCESS: Confidential

Jan 3, 2019

  #36

Basil, I haven't come across any published (web or otherwise) detailed history of AI Mk 9. My summary

<https://www.secretprojects.co.uk/threads/german-late-war-radar-development.25713/#post-261274>

comes from perusing various docs at the TNA and other places. I've still not got the complete story though ...

Report

Like

Reply



fightingirish

ACCESS: Top Secret

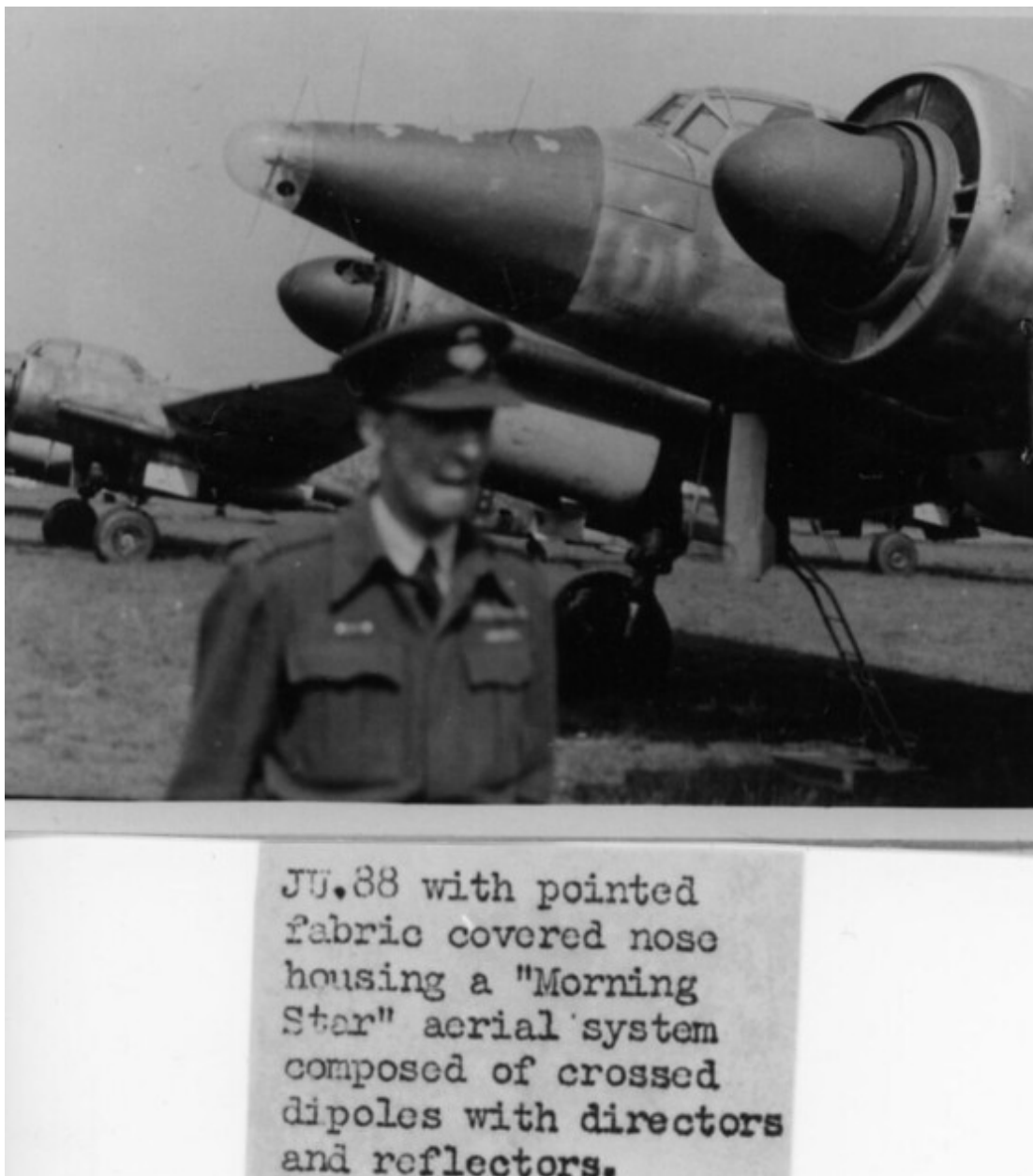
Senior Member

Sep 18, 2019

#37

A Junkers Ju 88 (G?) with a Morgenstern (Morningstar) antenna under a fabric or a rubber-coated, wooden conical radome.

Link at SDASM Archives :



Code:

<https://flic.kr/p/2hdvMWW>

Slán,
fightingirish

Slán is an Irish Gaelic word for Goodbye

Avatar:

"Sharks' Attack"

Arado Ar-583s heavy fighters attack American bombers, using their X-4 missiles, during late September 1946.[...]

Artist: Anastasios Polychronis

Source: <https://www.artstation.com/itifonhom> Report Like Reply**edwest**

ACCESS: Top Secret

Senior Member

Sep 18, 2019

  #38

There were many late-war developments. Among them was the Berlin N1a which operated at 9 cm. It was small enough that the dish could fit inside the nose of the Me 262. Nose coverings for other radars for aircraft were made of wood. Further to post #37, the designation is FuG 220 "Lichtenstein SN 2." The date given is mid-year 1944. Source: Radarkrieg und Nachtluftverteidigung über Berlin by Helmut Bukowski.

Last edited: Sep 18, 2019

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